

Popular Mechanics

**MORE
MACHO
FOR YOUR
4x4**



Customize Your Sport/
Utility For Stronger
Performance, Tougher
Looks And Plus Value

**American Technology
Goes For The Gold**

OLYMPICS '88

4 Incredible Sports
Equipment Breakthroughs
That Will Help Us Win

HOW WE'LL LIVE ON THE MOON

Man's Next
Space Challenge
By Isaac Asimov



**21st CENTURY
HORSEPOWER**
Inside Look At The
Next-Generation
Car Engines

**TACKLE BOX
TREASURES**
Antique Fishing Reels—
New Collector Craze

HOME AND SHOP SPECIAL

Best Of The New Outdoor
Power Equipment

- Yard Trucks
- Tractors
- Chain Saws
- Leaf Blowers
- Trimmers
- Tillers

And More!



Two-man bobsled is super aerodynamic, utilizes high-tech, high-strength materials to eliminate chassis and save weight

Space Station Underway

HUNTSVILLE, AL.—NASA contract-winner Boeing Aerospace has embarked on the task of designing and building the Space Station Laboratory and Habitation modules. But now, visitors to the Marshall Space Flight Center can get a glimpse of mid-1990s space



Employee pulls out Space Station's mobile workbench.

life: Full-scale mockups already exist for crew-member training, operations support

and as engineering aids.

Both cylindrical modules are about 44 ft. long and 14 ft.

in diameter. At one end of the mockup in the life science area is a 1.8-meter centrifuge and storage racks for plants and animals. In space, this will create artificial gravity for animal habitat and plant experiments.

At the front end of the habitation module are quarters for up to eight astronauts. There is also a health maintenance facility to let the crew monitor vital signs and take X-rays and blood samples.

Still under preparation are mockups of the Station's logistics module and interconnecting nodes.

Robotic Lineman



Safe in his truck, a teleoperator repairs line by remote control.

PHILADELPHIA, PA—TOMCAT (Teleoperator for Operations, Maintenance and Construction Using Advanced Technology) is designed to take the danger out of overhead transmission line repair.

Wielding a manipulator arm similar to those used in Shuttle missions, TOMCAT is guided with a video camera by an operator in a truck. The manipulator has the same degree of freedom as a human hand, plus continuous 360° wrist rotation. Once led through an operation, the manipulator repeats movements forward or backward.

Designed by Kraft Oceanic Systems to operate underwater, the manipulator can also work in water-filled manholes and other wet environments.

Utilities have already tested prototype TOMCATs, changing insulation on live high-voltage lines and cleaning transformers in nuclear plants.



This MOTR unit can track 10 targets simultaneously.

Multitarget Test Radar

WHITE SANDS, NM—This radar system, the first of its kind, combines a new electronically steered phased-array antenna, a high-power transmitter and a Defense Department-caliber minicomputer.

Called Multiple Object Tracking Radar (MOTR),

the equipment may beef up instrumentation at test-range facilities. RCA Aerospace says its MOTRs can locate several targets at once more accurately than the best combination of existing single-target radars. The technology has implications for battleship defense.

Steady Cool

WORTHING, ENGLAND—Temperature control during manufacturing is essential for goods as diverse as steel, processed food, semiconductors and false teeth.

Eurotherm Ltd. says its temperature controllers eliminate a major manufacturing headache—maintaining the temperature after the process has been modified. A microelectronic adaptive tuner feeds back on the controller to ensure control. The device may remove research-to-production hurdles.



"Smart" temperature control.